

REMARKS

Claims 3, 4, 7 through 11, and 14 are in the application, with claims 7 through 10 having been withdrawn from consideration. Claims 3 and 11 have been amended and claims 1, 2, 5, 6, 12, and 13 have been cancelled. Of the claims currently under consideration, claims 3 and 11 are independent. No new matter has been added. Reconsideration and further examination are respectfully requested.

Objections

The drawings are objected to under 37 C.F.R. §1.83(a) for allegedly failing to show the microprocessor and memory recited in claim 11. Applicant respectfully points out that FIG. 13 shows apparatus 1 and memory 210. As described in the specification on pages 6 and 7, “Apparatus 1 may comprise a microprocessor.” Moreover, memory 210 is described as follows: “Memory 210 may comprise any type of memory for storing data, such as a Single Data Rate Random Access Memory, a Double Data Rate Random Access Memory, or a Programmable Read Only Memory.” Accordingly, the drawings clearly show a microprocessor and memory as recited in claim 11. Withdrawal of the objection is respectfully requested.

Claim Rejections

Claims 3 through 6 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,909,056 (“Mertol”). Claims 1 and 2 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,569,710 (“Piesrson”). Claims 11 through 14 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,570,815 (“Kashiwazaki”) in view of Mertol. Reconsideration and withdrawal of the rejections are respectfully requested.

Claims 3 and 11

Amended independent claim 3 describes an apparatus comprising an integrated circuit package, an integrated circuit die coupled to the integrated circuit package, and a stiffener portion coupled to the integrated circuit package. The stiffener portion surrounds the integrated

circuit die and defines a well with the integrated circuit package in which the integrated circuit die is disposed. A thermally-conductive material is disposed within the well and the thermally-conductive material contacts the stiffener portion and the integrated circuit die. A heat sink is coupled to the stiffener portion and is in contact with the thermally-conductive material. The thermally conductive material is disposed between the integrated circuit die and the heat sink.

The art of record is not seen to disclose or to suggest the above features of claim 3. In particular, the art of record is not seen to disclose or suggest a thermally-conductive material disposed within a well, in contact with a stiffener portion and a heat sink, and disposed between an integrated circuit die and the heat sink.

Mertol relates to a heat spreader for flip chip packages. Mertol, at column 3 line 24 through column 4 line 25, describes a first epoxy with a high thermal conductivity 210, a substrate 206, a metal-to-metal seal 202, a stiffener ring 203, a second epoxy 204, a semiconductor device 211, and a heat spreader 200. As shown in FIG. 2 of Mertol, the first epoxy 210 contacts the semiconductor device 211, the stiffener ring 203, and the heat spreader 200. The first epoxy 210 is not disposed between the heat spreader 200 and the semiconductor device 211. Rather, only metal-to-metal seal 202 is located between the heat spreader 200 and the semiconductor device 211.

Accordingly, Mertol cannot be seen to disclose or suggest a thermally-conductive material disposed within a well, in contact with a stiffener portion and a heat sink, and disposed between an integrated circuit die and the heat sink.

The remaining art of record has been reviewed and is not seen to remedy the foregoing deficiencies in Mertol. Therefore, the art of record, taken in any permissible combination is not seen to disclose or to suggest a thermally-conductive material disposed within a well, in contact with a stiffener portion and a heat sink, and disposed between an integrated circuit die and the heat sink.

In view of the foregoing, amended independent claim 3 is believed to be in condition for allowance. Claim 4 depends from claim 3 and is therefore also believed to be allowable for at least the following reasons.

Amended independent claim 11 relates to a system in which a thermally-conductive material is disposed within a well, is in contact with a stiffener portion and a heat sink, and is disposed between an integrated circuit die and the heat sink. Accordingly, for at least the reasons given above with respect to claim 3, claim 11 and its dependent claims are believed to be in condition for allowance.

C O N C L U S I O N

The outstanding Office Action presents a number of characterizations regarding the applied references, some of which are not directly addressed herein because they are not related to the rejections of the independent claims. Applicant does not necessarily agree with the characterizations and reserve the right to further discuss those characterizations.

For at least the reasons given above, it is submitted that the entire application is in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience. Alternatively, if there remains any question regarding the present application or any of the cited references, or if the Examiner has any further suggestions for expediting allowance of the present application, the Examiner is kindly invited to contact the undersigned via telephone at (203) 972-4981.

Respectfully submitted,



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Date

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